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Fine needle aspiration cytology of superficial lymph nodes (a study of 150 cases in rural based teaching hospital)

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ABSTRACT:
The present randomized study was undertaken to study cytological features of non neoplastic and neoplastic lesions of enlarged lymph nodes by Fine needle aspiration cytology in 150 patients presented with lymphadenopathy in Shree Krishna Hospital, Karamsad over a period of 15 months. Tuberculous lymphadenitis, reactive lymphadenopathy, metastatic carcinoma, suppurative lymphadenitis, lymphomas were seen in 35.33%, 25.33%, 32.66%, 4.0% and 2% respectively. One case of leukemic infiltration in lymph node was reported first time in our hospital. Tuberculous lymphadenitis was seen often in second and third decades and reactive hyperplasia of lymph node in first three decades of life. Metastatic lymphadenopathy was seen predominantly above the forty years of age. Cases of lymphoma were distributed in all age groups. Metastatic carcinoma of lymph nodes was seen to be more common in males. Squamous cell carcinoma is the most common metastatic carcinoma. Cervical lymph nodes were commonly involved in all types of lymphadenopathy.

Key Words: Fine needle aspiration cytology, Lymphadenopathy, Metastasis

INTRODUCTION

Lymphadenopathy is one of the commonest clinical presentations of patients attending the outdoor patient department. Fine needle aspiration cytology is a, simple, safe, reliable, rapid and inexpensive method of establishing the diagnosis of lesions and masses in various sites and organs [1]. Lymph node aspiration is of great value for the diagnosis of lymphadenitis, lymphomas and Metastatic carcinoma [2, 3]. The value of Fine needle aspiration cytology, besides making a diagnosis, also lies in early direction of appropriate investigations. It also gives a great relief to the anxiety of the patients and relatives as it is a safe, almost painless requiring no anesthesia and the report is available within a short time avoiding complications [2].

Superficial lymph nodes comprise an important part of the defense system of the human body. They become secondarily involved in virtually all infectious diseases and in many neoplastic disorders. Lymph nodes may be enlarged as a reaction to a local inflammatory process or associated with a systemic disease, where the central focus is not the lymphatic system. A systemic appraisal of the enlarged lymph nodes provides clues not only to some obscure pathology, but may also lead to the disease arising de novo in the lymph nodes. The present randomized study was undertaken to study non neoplastic and neoplastic lesions of enlarged lymph nodes by fine needle aspiration cytology in patients presenting with lymphadenopathy referred to cytology section of Pathology department from the OPD/IPD of Shree Krishna hospital, Karamsad, over a period of fifteen months. Fine needle aspiration cytology is also done for confirmation of peripheral lymph node metastasis of a known and occult primary and it can help the clinician about the primary site.

MATERIAL AND METHODS

A total of 150 patients presenting with superficial palpable lymph nodes, which were referred to cytology section of Pathology department from the OPD/IPD of Shree Krishna Hospital, Karamsad, over a period of fifteen months were taken into the study. In each instance, a brief history and physical examination along with evaluation of relevant investigation, if available, was carried out. Fine needle aspiration cytology procedure performed by pathologist using 22-24 G needle attached to 10-20 ml of syringe. Multiple sites were aspirated. The aspirated material was smeared onto slides in each case. Slides were immediately put into the fixative solution and air dried. Alcohol fixed smears were stained by Hematoxylin & Eosin and Papanicolaou (PAP) method. The air dried smears were stained with May-Grunwald-Giemsa (MGG) stain. Special stains like Ziehl Neelson (ZN) stain for acid fast bacilli (AFB), PAS for mucin were done whenever required. At the end of the study, data were analyzed.

RESULTS

Out of 150 cases with palpable lymph nodes, Tuberculous lymphadenitis, Reactive lymphadenopathy, Metastatic carcinoma, Suppurative lymphadenitis, Lymphoma were seen in 35.33%, 25.33%, 32.66%, 4.0% and 2% respectively. (Table 1)

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Table1. Cytological Diagnosis of 150 Cases of Lymphadenopathy

Cytological Diagnosis	No. of Cases	Percentage (%)
Tuberculous Lymphadenitis	53	35.33
Reactive Lymphadenitis	38	25.33
Suppurative Lymphadenitis	06	4.00
Hodgkin's Lymphoma	02	1.33
Non Hodgkin's Lymphoma	01	0.66
Leukemic Infiltration	01	0.66
Metastatic carcinoma	49	32.66

Table 2. Age wise distribution of lymphadenopathy

Sr. No.	Cytologic Diagnosis	Age Distribution (in years)						
		0-10	11-20	21-30	31-40	41-50	51-60	>60
1	Tuberculosis Lymphadenitis	03	13	15	08	06	05	03
2	Reactive hyperplasia	07	07	10	05	06	-	03
3	Suppurative Lymphadenitis	02	-	01	01	01	-	01
4	Hodgkin disease	01	-	-	01	-	-	-
5	Non Hodgkin disease	-	-	-	-	-	-	01
6	Leukemic Infiltration	-	-	-	-	-	01	-
7	Metastatic carcinoma	-	-	-	05	08	18	18

Table 3. Lymph node group involved in various type of Lymphadenopathy

Lymph node	Tuberculous	Reactive hyperplasia	Suppurat-ive	Lymphoma		Leukemic infiltration	Metastatic Carcinoma
				Hodg-kin	Non-Hodgkin		
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Cervical	45 (84.9)	35 (92.1)	05 (83.3)	2 (100)	-	-	37 (75.5)
Supra clavicular	05 (9.43)	-	-	-	-	-	04 (81.6)
Axillary	02 (3.77)	03 (7.89)	01 (16.6)	-	-	-	06 (12.2)
Inguinal	01 (1.88)	-	-	-	-	-	02 (4.08)
Generaliz-ed	-	-	-	-	01 (100)	01 (100)	-

Table 4: Sex and incidence of Metastatic Lesions

Metastatic Lesion	Sex		Total
	Male	Female	
Squamous Cell Carcinoma	32	08	40(81.6%)
Adenocarcinoma	01	02	03(6.1%)
Breast Carcinoma	-	05	05(10.2%)
Follicular Carcinoma of Thyroid	01	-	01(2.04%)
Total	34(69.3%)	15(30.6%)	49(100.0%)

Table 5. Biopsy v/s FNAC

Biopsy	FNAC
Surgical procedure	OPD procedure - simple
Produces scar	No scar
Diagnosis in days	Diagnosis in hours
Costly	Cost effective
Requires anesthesia	No anesthesia required
More complications	Less complications

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Table 6. Role of FNAC in Superficial Lymphadenopathy

Advantages	Disadvantages	Complications
• Minimally invasive • Simple • Relatively painless • Speedy result • Cost effective • Superficial as well as deep lesions • Suitable in debilitated patients • Low risk of complications • Readily repeatability • Frozen section can be avoided	• Require lot of experience • Unsatisfactory aspiration • Sensitivity and specificity is not 100 %.	• Hematoma • Tumor dissemination or implantation along fine needle track

Table 7. Comparison of the incidence of lymphadenopathy due to different etiological factors

Etiological Group	Patra et al[14] 1983	Bhaskar et al [3] 1990	Ruchi Khajuria [15] 2006	Present Study
Tuberculosis Lymphadenitis	37.5%	67.57%	52.3%	35.33%
Reactive Lymphadenitis	33.0%	20.86%	37.2%	25.33%
Suppurative Lymphadenitis	5.8%	1.5%	1.0%	4.00%
Hodgkin's Lymphoma	1.9%	0.74%	0.8%	1.33%
Non-Hodgkin's Lymphoma	4.8%	2.23%	1.2%	0.66%
Leukemic Infiltration	0.9%	-	-	0.67%
Metastatic	14.5%	5.6%	3.8%	32.6%

Table 8. Comparison of location of metastatic lesion

Study	Year	Total Cases	Cervical	Supra clavicular	Axillary	Ingu-inal
Frable J [12]	1976	97	51%	23%	16%	10%
Betsill and Hadju [9]	1980	339	62%	16%	11%	11%
Ruchi Khajuri [15]	2006	25	84%	-	4%	12%
Present Study	2007	49	75.51%	8.16%	12.24%	4.08%

Table 9. Comparison of incidence of Metastatic lesion

Study	Year	Total Cases	SCC	Adeno carcinoma	Miscellineous Malignancy
Engzell and associate [11]	1971	962	40%	38.6%	21.4%
Hajdu et al [13]	1973	116	68%	25%	7%
David L[10]	1975	150	89.3%	6.6%	4%
Betsil et al [9]	1980	339	53%	29%	18%
Arora B [8]	1999	102	37.2%	7.8%	55%
Present Study	2007	49	81.6%	6.1%	12.1%

Tuberculosis and Metastatic lesions are the common causes of lymphadenopathy and maximum numbers of cases seen are of Tuberculosis. Tuberculous lymphadenitis was seen often in second and third decades and Reactive hyperplasia in first three decades of life.(Table 2) Cervical lymph nodes were involved most often in all types of lymphadenopathy.(Table 3) Squamous cell carcinoma is the most common metastatic lesions of lymph node and comprise of 81.63% of the cases. Metastatic lesions of lymph node were more common in males than in females except metastatic lesions from carcinoma of breast. (Table 4) Cervical lymph node was the most common site for metastasis of Squamous Cell Carcinoma. Axillary lymph nodes were common site for metastasis from breast malignancy.

DISCUSSION

FNAC is an inexpensive, completely safe and quick method for the diagnosis of lymphadenopathy and reduces the need for surgical biopsy (Table 5).

We have presented our experience with 150 cases of lymphadenopathy over a period of fifteen months. In the present study, diagnosis was based on definite cytomorphological findings with clinicocytological correlation. Our primary aim was to help the clinician in arriving at an early diagnosis in cases presenting

with lymphadenopathy. The pattern of lesions consisted of Tuberculous lymphadenitis, Reactive lymphadenopathy, Metastatic carcinoma, Suppurative lymphadenitis, Lymphoma, and one case of leukemic infiltration in lymphnode. Distribution seen in our study is more or less the same as reported in other studies in India and other developing countries. Maximum numbers of cases in our study were of tuberculous lymphadenitis. Tuberculous lymphadenitis proved to be the most common diagnosis in our study. In India, tuberculous lymphadenitis is one of the most common type of lymphadenopathy encountered in clinical practice in India [3,4,5,6], whereas it is in sharp contrast to very low frequency of 1.6% in developed countries[7]. The highest incidence of tuberculous lymphadenitis was seen in second and third decades while Reactive hyperplasia was common in first three decades of life. Metastatic lymphadenopathy was seen predominantly above the forty years of age. Metastatic carcinoma is significantly more common in males and the superficial lymph nodes are common sites of metastasis.

On comparing lymph node group involved in metastatic lesions, it has been seen that lymph nodes of the neck are most commonly involved in metastatic lesions. Squamous cell carcinoma is the most common metastatic lesion. Supraclavicular nodes are most likely to be malignant hence, should always be investigated even in children. Benign reactive inguinal lymphadenopathy is the most common etiologies, and inguinal lymphadenopathy is of low suspicion for malignancy. In our study we are getting least cases of inguinal lymphadenopathy. Carcinoma of external genital region, the lymphomas and melanoma also involved this group of lymphnode [8].

Generalized lymphadenopathy defined as lymphadenopathy found in two or more distinct anatomic regions, is more likely than localized adenopathy to result from serous infections, autoimmune diseases and disseminated malignancy. Generalized lymphadenopathy infrequently occur in patients with neoplasms, but it is occasionally seen in patients with Leukemias and Lymphomas or advanced disseminated metastasis, solid tumours, Hodgkin's lymphomas and most metastatic carcinomas typically progress through nodes in anatomic sequence[9].

Comparison of incidence of lymphadeopathy in different etiology were compared with other studies. Results of our study were almost similar to other studies. (Table 7)

The anatomical site of involved node along with age and sex may give some indication to the location of primary tumour. For example, axillary lymph nodes commonly harbor the metastatic deposits from the breast, lungs or ovaries in middle aged females. Location of metastatic lesion was comparable to the other studies. (Table 8) The cytomorphological pattern seen in routinely stained smears often give clue to the site of primary tumour. Glandular cells moderately pleomorphic arranged in a gland – in – gland or in cribriform pattern suggest a prostatic carcinoma. Columnar cells with elongated nuclei arranged in palisades, stringy mucus and necrosis suggest primary in large bowel, while mucin containing signet ring cells suggest the stomach as the most likely primary site among several other possibilities [10, 11, 12]. The incidence of Squamous cell carcinoma,

Adenocarcinoma and miscellaneous malignancies are more or less comparable with other studies [13, 14, 15]. In present study squamous cell carcinoma is the most common metastatic lesion of lymph node (81.6%) which is comparable with other studies.(Table 9) Miscellaneous malignancies are more common than metastatic adenocarcinoma of lymph node in present study.

Considering the above facts, FNAC is strongly recommended for diagnosis of lymphadenopathy and with experienced cytologist it has a bright future.

CONFLICT OF INTEREST: Nil

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